Mathematics Curriculum Intent	
Years 7 and 8	The KS3 curriculum is designed to build subject knowledge and understanding. We want students to develop problem solving skills as well as logic skills. To be able to apply mathematical concepts to real life scenarios. To think critically when presented with a problem. To have the ability to apply maths, for example developing financial sense (e.g. payslips and interest). Students will develop an understanding of how to check mathematical thinking in a logical, coherent way. The KS3 curriculum builds upon their prior knowledge from KS2, and links directly to the KS4 foundation content. This gives all students a firm grounding to build upon at KS4. Students cover the five main domains of mathematics: number, ratio and proportion, algebra, geometry, and statistics and probability. They learn to solve problems in each of the domains.
Year 9	All students in Year 9 study this subject. Students continue to study National Curriculum content and develop transferable skills and foundation knowledge in order to support the transition to KS4 and GCSE study. Some appropriate GCSE content will be covered from the autumn term of Year 9.
Years 10 and 11	The curriculum is designed to build Mathematical knowledge and understanding. Our KS4 SOL covers Number, Shape and Space, Data Handling and Algebra in such a way that related mathematical concepts and skills can be taught coherently over a sequence of lessons. It therefore includes a wide range of exciting enrichment which provides enjoyment, breadth, and challenge. All strands of work are kept moving forward, topics are revisited over time ensuring that spaced memory retrieval allows concepts to be stored in long term memory. Scaffolding and modeling are used to support students at different levels. Students are regularly given the opportunity to reflect on their new learning and highlight outcomes as they go along. Assessments at regular intervals form part of the learning journey and students are all expected to be a key part of the process where they are given time to reflect on their progress and teachers' feedback after each assessment identifying where they did well and what they need to do to make improvements. Problem Solving is an integrated part of the curriculum and contextual problems provide a grounding in real life which reminds students that the subject has relevance in the world around us. It also provides pupils with the opportunity to learn of possible careers that require the ability to use the Mathematical skills they have studied on their learning journey. As students progress through the courses the level of Mathematical knowledge and understanding increases and students are required to link information in a logical manner, developing an appreciation for the interaction of different area of Mathematics. In Year 9, students consolidate their knowledge and understanding of key Maths concepts from Years 7 and 8 and lay the building blocks for the start of their GCSE. At the end of the KS4 course pupils will take the AQA GCSE exam at either Foundation or Higher tier and the most able Mathematicians will also take the AQA Level 2 Further Mathematics certificate.
Year 12 and 13	

	Students should build upon their existing mathematical knowledge, developing logical thinking skills and problem solving skills. Students should develop conceptual understanding, and the ability to find and appreciate links between different elements of mathematics (and other closely related disciplines) moving beyond a purely procedural understanding. Students will leave with the required skills and knowledge needed to pursue the study of mathematics or another STEM discipline at a higher level, as well as a deeper appreciation of the beauty of mathematics.

All work is differentiated between Support, Core and Higher. The lists below are indicative of the content of each unit only and exact details will vary depending upon a student's set.

Mathematics Curriculum Implementation						
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Year 7	UNIT 1 - Integers and Decimals, Standard Form, Rounding: • Integer calculations • Decimal calculations • Factors and multiples • Rounding, estimation and bounds • Standard form Unit 1 Teacher guidance Unit 2 - Factorising, Expanding, Substituting • Simplify algebraic expressions • Factorise and expand brackets • Substitution	Unit 2 - Factorising, Expanding, Substituting cont… UNIT 3 - Angles, Bearings, Angles in a Polygon • Types of polygon • Types of angle • Measure and draw angles • Solving missing angle problems Unit 3 Teacher guidance	UNIT 4 - Perimeter, Area and Volume • Perimeter and area of 2D shapes • Volume and surface area of 3D shapes Unit 4 Teacher guidance	UNIT 5 - Fractions, Decimals and Percentages • Fraction calculations • Converting FDP • Percentage calculations Unit 5 Teacher guidance	UNIT 6 - Probability • Probability scale • Mutually exclusive • Two way tables • Relative frequency • Frequency trees • Tree diagrams • Venn diagrams Unit 6 Teacher guidance UNIT 7 - Statistics • Types of charts • Types of data • Averages Unit 7 Teacher guidance	UNIT 7 - Statistics cont… UNIT 8 - Constructions, Plans and Elevations, Scale Drawings • Converting units • Scale drawings • 2D representation of 3D shapes • Constructions Unit 8 Teacher guidance

	Unit 2 Teacher guidance					

Year 8	UNIT 9 - Ratio, Proportion and Compound Measures
	
	• Proportion of amounts
	• Compound measures
	• Ratio
	• Direct and inverse proportion
	• Best buys
	
	Unit 9 Teacher guidance
	
	UNIT 10 - Solving equations
	
	• Solving one step equations
	• Solving two step equations
	• Solving three step equations
	• Solving linear inequalities
	• Solving quadratic equations
	• Solving linear simultaneous equations
	• Changing the subject of a formula
	
	Unit 10 Teacher guidance
		UNIT 10 - Solving equations cont…
		
		UNIT 11 - Sequences
		
		• Describing sequences
		• Special sequences
		• Using and generating the nth term
		• Geometric sequences
		
		Unit 11 Teacher guidance
			UNIT 12 - Geometry, Pythagoras, Trigonometry
			
			• Area of 2D shapes
			• Perimeter of 2D shapes
			• Pythagoras
			• Right-angled Trigonometry
			
			Unit 12 Teacher guidance
				UNIT 12 - Geometry, Pythagoras, Trigonometry cont…
				
				UNIT 13 - Graphing
				
				• Plotting coordinates
				• Gradient
				• Equation of a straight line graph
				• Parallel lines
				• Quadratic graphs
				• Types of graphs
				
				Unit 13 Teacher guidance
					UNIT 14 - Transformations, Similarity, Congruence, Vectors
					
					• Symmetry
					• Enlargement
					• Rotation
					• Reflection
					• Translation
					• Similarity
					• Congruence
					• Vectors
					
					Unit 14 Teacher guidance
						UNIT 15 - Money Unit
						
						• For example:
						  ○ Interest
						  ○ Mortgages
						  ○ Pay
						  ○ Tax
						  ○ Savings
						  ○ Budgeting
						  ○ Banking
						
						Review Units 1-14
						
						• Individual teachers guide which topics theri classes most need to revisit and secure

Year 9	UNIT 1 - Integers and Decimals: • Integer calculations • Decimal calculations • Factors and multiples • Rounding, estimation and bounds • Standard form including calculations Unit 1 Teacher guidance UNIT 2 - FDP, Ratio & Proportion, Compound Measures, Surds • Fraction calculations • Converting FDP • Ratio • Percentage calculations • Compound measure • Simplify simple surds unit 2 Teacher guidance	UNIT 2 - FDP, Ratio & Proportion, Compound Measures, Surds cont…	UNIT 3 - Factorising, Expanding, Rearranging, Functions • Simplify algebraic expressions • Factorise and expand brackets • Change the subject of the formula • Function notation unit 3 Teacher guidance	UNIT 4 - Solving Equations: Linear, Inequalities, Simultaneous & Quadratics • Solve linear equations • Solve linear inequalities • Solve quadratic equations • Solve a pair of linear simultaneous equations • Solve a pair of simultaneous equations including a quadratic Unit 4 Teacher guidance	UNIT 5 - Graphs including graphing inequalities • Coordinates • Gradient • Straight line graphs • Quadratic graphs • Other important graphs Unit 5 Teacher guidance	UNIT 6 - Angles, Bearings, Angles in Polygons & Circle Theorems • Types of polygon • Types of angle • Measure and draw angles • Solving missing angle problems • Circle theorems Unit 6 Teacher guidance Unit 7 - Probability • Calculate probabilities • The language of probability • Two-way tables • Venn diagrams • Tree diagrams • Conditional probability Unit 7 Teacher guidance
Year 10	UNIT 1 - Integers and Decimals, Standard Form, Rounding, Bounds • Integer calculations	UNIT 3 - Factorising, Expanding, Rearranging, Functions	UNIT 5 - FDP, Ratio & Proportion, Compound Measures, Surds • Fraction calculations	UNIT 6 - Solving Equations: Linear, Inequalities & Quadratics, Iteration	UNIT 8 - Transformations, Similarity, Congruence & Vectors cont…	UNIT 9 - Sequences cont…

	• Decimal calculations • Factors and multiples • Rounding, estimation and bounds • Standard form • Estimate powers and roots • Systematic listing • Negative and fractional indices unit 1 Teacher guidance UNIT 2 - Statistics • Statistical charts and diagrams • Types of data • Averages • Interpret statistics • Cumulative frequency • Histograms Unit 2 teacher guidance	• Simplify algebraic expressions • Factorise and expand brackets • Change the subject of the formula • Function notation including composite and inverse functions Unit 3 teacher guidance UNIT 4 - Perimeter, Area and Volume • Perimeter and area of 2D shapes • Volume and surface area of 3D shapes Unit 4 teacher guidance	• Converting FDP including recurring decimals • Ratio • Percentage calculations • Surds Unit 5 teacher guidance	• Solve linear equations • Solve linear inequalities • Solve quadratic equations • Solve quadratic inequalities • Solve a pair of linear simultaneous equations • Solve a pair of simultaneous equations including a quadratic • Iteration *Additional unit 6 content for Level 2 FM:* • Algebraic proof • Factor theorem • Solve cubic equations Unit 6 teacher guidance UNIT 7 - Constructions, Plans and Elevations, Scale Drawings • Converting units • Scale drawings • 2D representation of 3D shapes • Constructions] • Loci Unit 7 teacher guidance	UNIT 9 - Sequences • Describing sequences • Special sequences • Using and generating the nth term • Geometric sequences • Quadratic sequences Unit 9 teacher guidance	UNIT 10 - Graphs including graphing inequalities • Plotting coordinates • Gradient • Straight line graphs • Parallel and perpendicular lines • Quadratic graphs • Other important graphs • Graph transformations • Inequalities • Area under a graph • Circle graphs and tangents Unit 10 teacher guidance

				UNIT 8 - Transformations, Similarity, Congruence & Vectors • Symmetry • Enlargement • Reflection • Rotation • Translation • Similarity • Congruence • Vectors including geometrical problem solving and proof • Invariance • Area and volume scale factors Unit 8 teacher guidance		
Year 11	UNIT 11 - Pythagoras and Trigonometry • Pythagoras theorem • Right-angled trigonometry • Exact trigonometric values • Non right-angled trigonometry • 3D Pythagoras and trigonometry • Drawing trigonometric graphs *Additional unit 11 content for Level 2 FM:*	UNIT 13 - Angles, Bearings, Angles in Polygons & Circle Theorems • Types of polygon • Types of angle • Measure and draw angles • Solving missing angle problems • Circle theorems including proof of circle theorems Unit 13 teacher guidance	Unit 15 Calculus (Level 2 FM only) • Differentiate $y = mx^k$ with respect to x, where m is a constant and k is an integer • Understand how differentiation relates to tangents • Find normals and tangents to curves • Use the second derivative to find turning points • Curve sketching	Revise topics red/amber from trial examination 2	Revise topics red/amber from trial exams and homework papers	External Exams

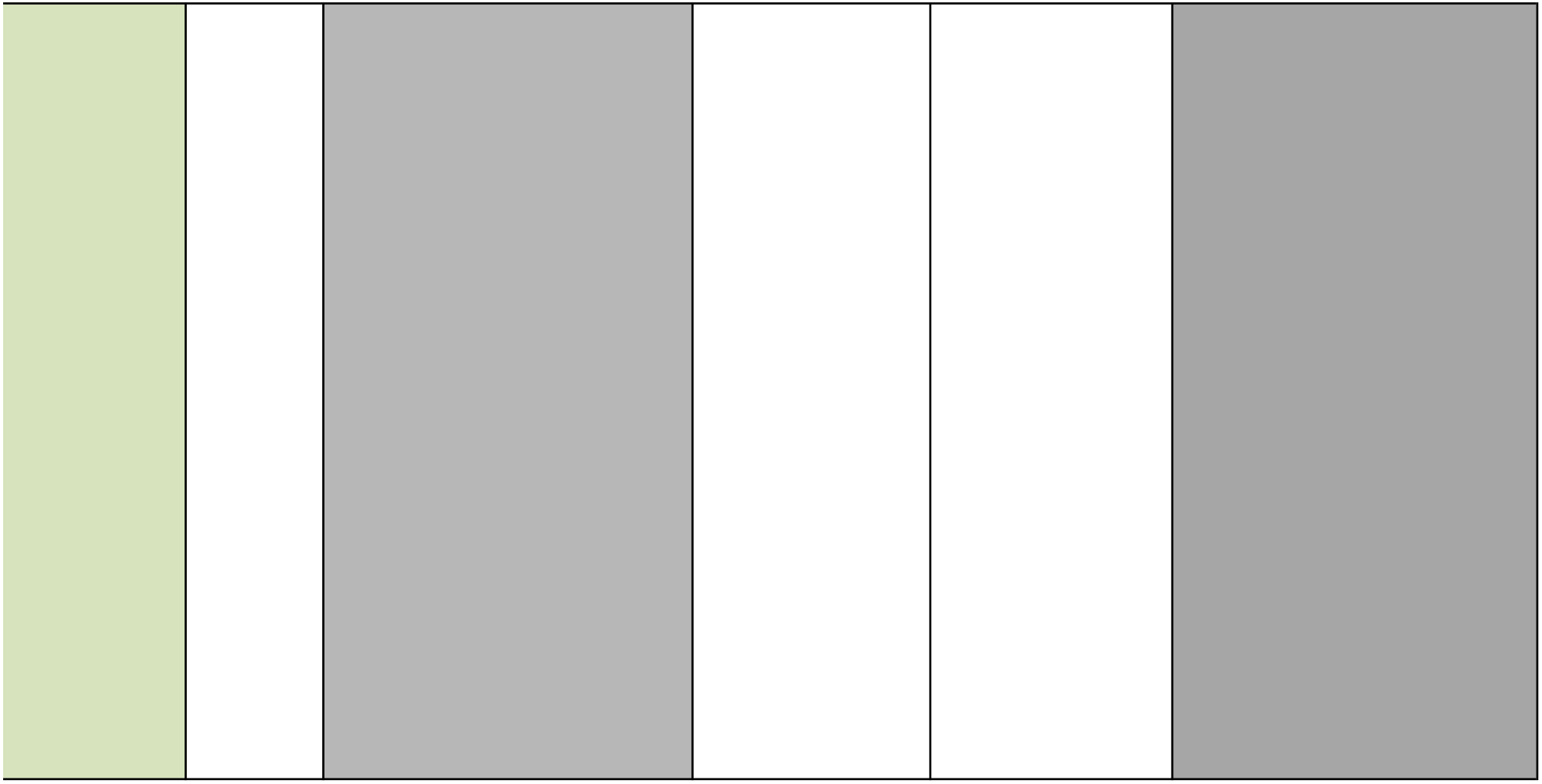
	• Trigonometric identities • Solving trigonometric equations Unit 11 teacher guidance Resource Link - Foundation Higher UNIT 12 - Simultaneous Equations and proportion • Represent and solve direct and inverse proportion problems algebraically and graphically • Algebraic and graphical methods for solving simultaneous equations (including where one is quadratic) *Additional unit 12 content for Level 2 FM:* • Solve three linear simultaneous equations Unit 12 teacher guidance	UNIT 14 - Probability • Calculate probabilities • The language of probability • Two-way tables • Venn diagrams • Tree diagrams • Conditional probability Unit 14 teacher guidance	Unit 15 teacher guidance Unit 16: Matrices (Level 2 FM only) • Multiply matrices • Understand the matrix I • translations Unit 16 teacher guidance Revise topics red/amber from trial exams and homework papers			

Year 12	**Algebra** Proof Index law Quadratics Simultaneous equations Inequalities Binomial theorem Algebraic division **Graphs** Straight lines Circles Transformations	**Trigonometry** Triangle problems Trig graphs CAST diagram Solving equations **Calculus** Differentiation integration	**Vectors** 2D vectors **Exponentials and Logs** Laws of logs Exponential functions Curve fitting	**Statistics** Collecting and representing data Probability Discrete random variables Binomial distribution **Mechanics** Kinematics Forces and Newton's Laws	**Statistics cont…** **Mechanics cont…** **Trigonometry** Radian measure Inverse trig functions Reciprocal trig functions Compound angles $a\cos\theta + b\sin\theta$	**Trigonometry cont…** **Agrabra** Functions
Year 13	**Agrabra** Further proof Partial fractions **Sequences & Series** Arithmetic Geometric **Binomial Theorem** **Calculus** Differentiation, including chain run, product rule Integration including substitution and by parts	**Calculus cont…** **Parametric equations** **Numerical methods** Iteration Newton-Raphson method	**Vectors** 3D Vectors **Statistics** Conditional Probability Normal Distribution **Mechanics** Kinematics in 2D Projectiles Stiatics Dynamics Moments	**Statistics cont…** **Mechanics cont…**	**Revision**	**Exam period**

Maths Curriculum Impact KS3

		FORMATIVE; *The instructional guidance that identifies central points of learning and plans for the progression of individual students.*	SUMMATIVE; *This describes individuals learning at the end of an instructional unit by comparing it against a standard or benchmark. (High Stakes Assessment)*	EVALUATIVE; *This is about institutional accountability and comes after terminal exams. External agencies.*
TIMESCALE	**Annually**		**Year 7:** - End of Year assessment - based upon all topics taught in year 7. **Year 8:** - End of Year assessment - based upon all topics taught in year 8.	The Maths Department tracks and evaluates summative assessment performance across the year to form a holistic view of student performance and progress and uses this to inform teaching, feedback, targets and intervention strategies. Departmental data spreadsheets are kept centrally on the subject drive. These are updated with all student data in KS3, and regularly monitored by the subject leader.

	Interim (termly or half-termly)		Teachers: - Evaluate student learning at the end of a certain teaching period. - Evaluate their teaching practice and lessons in line with Summative Assessment outcomes. 4 formal assessment points across each year at the end of each unit. Levels based upon the following levels: - Mastery - Secure - Emerging - Developing Written feedback and student responses in the form of react should be evident. These are in student assessment books or folders/exercise books.	



	Weekly	Teachers role: - Identify how students are performing and use this to provide support, evaluate student learning and plan future lessons. - Provide oral and/or written feedback. - Keep track of student progress using department internal and school wide data systems. - Scaffold feedback to students for effective self/peer assessment. Students role: - Engage in self assessment. - Engage in peer assessment. - Be proactive in ReACT tasks. - Revise content.	

		- Identify their own strengths and weaknesses and ask for support from their subject teachers. .	

	Hourly	*'Every Lesson Every Day'* techniques are embedded in lessons including: - Review last lesson, last week, last year. - Checking for student understanding, asking higher order questions and providing feedback - ensuring students respond to this feedback. - Low stakes testing activities. Every lesson a variety of the following formative assessment takes place using the following strategies: - Questioning - Low stakes testing - Spiral learning - Oral feedback - Whole-class feedback - Class and teaching modelling - Regular re-cap quizzes	

		- Retrieval practice tasks	